

REMARKS

In the Office Action the Examiner noted that claims 1-29 are pending in the application. The Examiner rejected claims 1-4, 11-12, 14-22, and 25-29, and objected to claims 5-10, 13, 21, and 23-24. By this Amendment, claims 1 and 18 have been amended. No new matter has been presented. Thus, claims 1-29 are pending in the application. The Examiner's rejections and objections are traversed below, and reconsideration of all rejected claims is respectfully requested.

Claim Objections

In item 1 on page 2 of the Office Action the Examiner objected to claim 1, stating that the language in the claims can be interpreted to be either a group of like nozzles or disparate nozzles.

The Applicants respectfully submit that the Examiner is properly interpreting the language of claim 1 as comprising a group of like nozzles or disparate nozzles. In other words, as stated in claim 1, "the gas nozzles have a variety of injection configurations." If all of the plurality of adapters have an identically situated gas nozzle, then the group is of like nozzles. However, if one or more of the adapters has a gas nozzle that is situated differently than the remainder of the adapters, then the adapters comprise a group of disparate nozzles. This is supported in at least paragraph [0048] of the specification, which states that "the adapters 30 having the gas nozzles 31 with the various configurations can be easily detached and attached, selectively." Also, example embodiments of disparate types of novel are provided in Figures 5A-7B. Therefore, as the adapters may be selectively detached and attached, and also have various configurations of the respective gas nozzles, the gas nozzles included in the gas supplying apparatus may have the same configuration or a disparate configuration.

Therefore, the Applicants respectfully submit that the language of claim 1 of the present application correctly recites the scope of the claim, and further respectfully requests the withdrawal of the Examiner's objection to the claim.

Claim Rejections Under 35 USC §102

In item 3 on pages 2-3 of the Office Action the Examiner rejected claims 1-3, 14, 18-19, and 28 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,270,862, issued to

McMillin et al. (hereinafter referred to as "McMillin"). The Applicants respectfully traverse the Examiner's rejections of these claims.

Claim 1 of the present application, as amended, recites:

A gas supplying apparatus for supplying deposition gas onto a substrate surface, the gas supplying apparatus comprising:

a gas supplying ring with a plurality of gas supplying channels formed along the interior of the gas supplying ring and with a plurality of gas distribution channels directed toward a center of the gas supplying ring; and

a plurality of adapters with gas nozzles connecting to the gas distribution channels, respectively, that detachably connect to the interior of the gas supplying ring, wherein the gas nozzles have a variety of injection configurations.

Therefore, the gas supplying apparatus of claim 1 of the present application recites "a gas supplying ring with a plurality of gas supplying channels formed along the interior of the gas supplying ring and with a plurality of gas distribution channels directed toward a center of the gas supplying ring." In other words, more than one gas supplying channel is provided.

This is in direct contrast to the gas ring disclosed in McMillin, which does not provide a plurality of gas supplying channels. As is apparent from at least Figures 1-2B of McMillin, the primary gas ring 170 contains only one gas supplying channel providing gas to the orifices and/or injector exit orifices located along the inner perimeter of the primary gas ring 170. As such, only one gas supplying channel is available to provide gas in the apparatus, as opposed to the gas supplying apparatus in claim 1 of the present application, in which a plurality of gas supplying channels are provided for the plurality of gas distribution channels.

Therefore, McMillin at least does not disclose the feature of "a gas supplying ring with a plurality of gas supplying channels formed along the interior of the gas supplying ring and with a plurality of gas distribution channels directed toward a center of the gas supplying ring."

Accordingly, McMillin does not disclose every element of the Applicants' claim 1. In order for a reference to anticipate a claim, the reference must disclose each and every element of the claim (MPEP §2131). Therefore, since McMillin does not disclose the features recited in independent claim 1, as stated above, it is respectfully submitted that claim 1 patentably distinguishes over McMillin, and withdrawal of the §102(b) rejection is earnestly and respectfully solicited.

Claims 2-3, 14, 18-19, and 28 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by McMillin. Therefore, it is respectfully submitted that claims 2-3, 14, 18-19, and 28 also patentably distinguish over McMillin.

Claim 28 of the present application recites "a plurality of supplemental gas nozzles

detachably connecting to the gas nozzles of the adapters, respectively, at various injection angles." This is in direct contrast to McMillin, which discloses injectors 180 that are all fixed at the same angle within any one gas ring 170. Figures 8b and 8d illustrate different gas rings 170, and the angle of the injectors 170 depend upon the angle of the receiving portion of the particular gas ring 170 in which the injectors are provided, but the receiving portions are apparently provided at the same angle throughout any one of the gas rings, and do not vary in their design or configuration. Therefore, it is respectfully submitted that claim 28 of the present application also patentably distinguishes over McMillin.

Claim Rejections Under 35 USC §103

In item 6 on page 4 of the Office Action the Examiner rejected claims 4 and 22 under 35 U.S.C. §103(a) as being unpatentable over McMillin as applied to claims 1 and 2, and further in view of U.S. Patent No. 6,197,683, issued to Kang et al. (hereinafter referred to as "Kang").

As discussed in the previous section of this Response, claim 1 of the present application patentably distinguishes over McMillin. Further, Kang, which discloses a chemical vapor deposition apparatus having control valves, does not cure at least the discussed deficiencies of McMillin. For a proper §103 rejection, the cited references must combine to disclose all of the features of the rejected claim. Therefore, as claims 4 and 22 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by the cited references, it is respectfully submitted that claims 4 and 22 also patentably distinguish over the cited references.

In item 7 on pages 4-5 of the Office Action, the Examiner rejected claims 11-12, 15-17, and 26-28 under 35 U.S.C. §103(a) as being unpatentable over McMillin in view of Kang as applied to claim 4.

As previously discussed in this response, claim 1 of the present application patentably distinguishes over the cited references. Therefore, as claims 11-12, 15-17, and 26-27 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by the cited references, it is respectfully submitted that claims 11-12, 15-17, and 26-27 also patentably distinguish over the cited references.

The Applicants assume that the Examiner has erroneously included claim 28 in the §103 rejections discussed in item 7 of the Office Action. Nevertheless, as discussed in the previous section of this Response, claim 28 patentably distinguishes over McMillin. Further, at least the

discussed deficiencies of McMillin are not cured by Kang, and therefore claim 28 of the present application also patentably distinguishes over the cited references.

In item 8 on page 5 of the Office Action the Examiner rejected claim 29 under 35 U.S.C. §103(a) as being unpatentable over McMillin.

The Examiner states that it would have been obvious to one having ordinary skill in the art at the time of the invention was made to construct the device of McMillin using multiple parts, and that use of the resulting apparatus would perform the method steps as claimed.

The Applicants respectfully submit that the Examiner has not addressed multiple features recited in claim 29 of the present application that are not disclosed in McMillin. The method disclosed in claim 29 recites “blocking one of the first gas distribution channel and second gas distribution channel.” However, there is apparently only one gas distribution channel disclosed in the gas ring of McMillin, and therefore no second gas distribution channel exists to be blocked. Also, claim 29 recites “selecting ones of the adapters according to the desired gas nozzle injection position and injection angle,” wherein the adapters are “detachable adapters with gas nozzles having various injection positions and injection angles with respect to the adapters.” As previously discussed in this Response, McMillin does not disclose gas nozzles having various injection positions and injection angles in a single gas supplying apparatus, but rather discloses fixed orifices which are not detachable, which may also receive attachable injectors which all extend in the same position and angle.

Therefore, for at least these reasons, the Applicants respectfully submit that claim 29 patentably distinguishes over McMillin, and respectfully requests the withdrawal of the §103 rejection.

Allowably Subject Matter

In item 9 on page 5 of the Office Action the Examiner objected to claims 5-10, 13, 21, and 23-24 as being dependent upon a rejected base claim, but indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As previously discussed in this response, claim 1 of the present application patentably distinguishes over the cited references. Therefore, as claims 5-10, 13, 21, and 23-24 depend from claim 1 and include all of the features of that claim plus additional features which are not taught or suggested by the cited references, it is respectfully submitted that claims 5-10, 13, 21,

and 23-24 also patentably distinguish over the cited references.

Summary

In accordance with the foregoing, claims 1 and 18 have been amended. No new matter has been presented. Claims 1-29 are pending and under consideration.

There being no further outstanding objections or rejections, it is respectfully submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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